



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,844	09/17/2003	Andy Werback	21119.0053(7157-500)	4879
7590	08/30/2004		EXAMINER KITOV, ZEEV	
Mitchell S. Feller Hogan & Hartson, L.L.P. 875 Third Avenue New York, NY 10022			ART UNIT 2836	PAPER NUMBER

DATE MAILED: 08/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/664,844	WERBACK ET AL.	
Examiner	Art Unit		
Zeev Kitov	2836		

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 17 September 2003.

2a)  This action is **FINAL**.                            2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 1 - 37 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5)  Claim(s) \_\_\_\_\_ is/are allowed.  
6)  Claim(s) 1 - 25 is/are rejected.  
7)  Claim(s) \_\_\_\_\_ is/are objected to.  
8)  Claim(s) 26 - 37 are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on 05/20/04 is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) Paper No(s)/Mail Date. \_\_\_\_ .  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) 5)  Notice of Informal Patent Application (PTO-152)  
Paper No(s)/Mail Date \_\_\_\_ . 6)  Other: \_\_\_\_ .

## DETAILED ACTION

### ***Election/Restrictions***

During a telephone conversation with Attorney, Mr. Mitchell Feller on August 26, 2004, a provisional election was made with traverse to prosecute the first invention, Claims 1 - 25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 26 – 37 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The inventions are distinct, each from the other because:

Claims 1 – 25 are drawn to the inrush current protection circuit (Invention I).

Claims 26 – 37 are drawn to 10 different embodiments; claim 26 is generic, claims 27 – 37 present 10 different species. Each of them is a different solution, which can be used individually.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

### ***Warning***

Applicant is advised that should claim 28 be found allowable, claim 33 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing

one claim to object to the other as being a substantial duplicate of the allowed claim.

See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is a following phrase: In the circuit of claim 1, wherein the switch circuit includes a field effect transistor having an "on" state resistance being in parallel with an in-rush current limiting resistor having a resistance, wherein said high impedance is substantially the resistance of said in-rush current limiting resistor and said low impedance is substantially said on resistance of said field effect transistor" (emphasis added). A meaning of underlined text is not clear. For purpose of examination it was assumed that the high impedance is higher than said resistance and the low impedance is lower than said resistance of the resistor.

Claims 2 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is that the word "substantially" used in Claim 2 as an indication of a magnitude or a range is indefinite. Regarding Claim 14, following phrase makes the claim indefinite: "wherein said high impedance is substantially said resistance of said in-rush current limiting resistor and said low

impedance is substantially said "on" state resistance of said field effect transistor". An exact meaning of words "substantially" in Claim 14 is not clear.

Claims 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. A reason for that is that both claims being dependent on Claim 1 recite "said circuit", while the Claim 1 recites two different circuits. For purpose of examination it was assumed that both claims recite both a switch circuit and a time-delay circuit.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Gauthier (5,155,648). Regarding Claim 1, Gauthier discloses all elements of the claim including a switch circuit (element T1 in Fig. 2) in series between a power source and a load, the switch inherently has an off state with a high impedance and an on state with a low impedance; a time-delay circuit (elements C1, R1 in Fig. 2) coupled to the switch circuit and inherently having a time constant; wherein before the time constant has elapsed, the switch circuit is in the time constant has elapsed, the switch circuit is in the

low impedance on state so that the load device is powered by the external power source.

Regarding Claim 2, Gauthier discloses the switch circuit includes a field effect transistor being in parallel with an in-rush current limiting resistor (element R21 in Fig. 3), wherein the high impedance is inherently higher than the resistance of the resistor and the low impedance is inherently lower than the resistance of the resistor.

Regarding Claim 13, Gauthier discloses a method for limiting the in-rush current of a device coupled to a low-power external power source, comprising steps of: inserting a switch circuit in series between the power source and the device, the switch having an "off" state with a high impedance and an "on" state with a low impedance; and coupling a time-delay shorting circuit to the switch circuit, the time-delay shorting circuit having a time constant; switching to the high impedance "off" state for limiting the in-rush current to the radio device before the time constant has elapsed; and switching to the low impedance "on" state after the time constant has elapsed so that the device is powered by the external power source (col. 2, line 57 – col. 4, line 14).

Claims 1, 2 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Preis et al. (4,891,728). Regarding Claim 1, Preis et al. disclose all elements of the claim including a switch circuit (element 11 in Fig. 2) in series between a power source and a load, the switch inherently has an off state with a high impedance and an on state with a low impedance; a time-delay circuit (elements 8 and 9 in Fig. 2) coupled to the switch circuit and inherently having a time constant; wherein before the time constant

has elapsed, the switch circuit is in the time constant has elapsed, the switch circuit is in the low impedance on state so that the load device is powered by the external power source.

Regarding Claim 2, Preis et al. disclose the switch circuit including a field effect transistor being in parallel with an in-rush current limiting resistor (element 20 in Fig. 3), wherein the high impedance is inherently substantially higher than the resistance of the resistor and the low impedance is inherently substantially lower than the resistance of the resistor.

Regarding Claim 13, Preis et al. disclose a method for limiting the in-rush current of a radio device coupled to a low-power external power source, including steps of: inserting a switch circuit in series between the power source and the device, the switch having an "off" state with a high impedance and an "on" state with a low impedance; and coupling a time-delay shorting circuit to the switch circuit, the time-delay shorting circuit having a time constant; switching to the high impedance "off" state for limiting the in-rush current to the device before the time constant has elapsed; and switching to the low impedance "on" state after the time constant has elapsed so that the device is powered by the external power source (col. 3, line 27 – col. 4, line 43).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preis et al. in view of Horowitz et al. textbook, *The Art of Electronics*. As was stated above, Preis discloses all the elements of Claims 1 and 2. However, regarding Claims 3 and 4, it does not disclose the value of the “on” state resistance of the MOS transistor. The textbook of Horowitz et al. discloses the values (see Table 3.5 on pages 164, 165), which satisfy the limitations in both claims. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Preis solution by selecting the MOS transistor with specific “on” state resistance value according to Horowitz et al. textbook, because as well known in the art, selection of particular transistor in the design depends on a trade off between such factors as the transistor quality (the “on” resistance value) and its price; resolving such trade off is a routine task for designer and is not considered as an innovation or an inventive step.

Claims 5 – 7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of view of Horowitz et al. textbook, *The Art of Electronics* and Court Decision *In re Boesch*, 617 F.2d 272, 205 USPQ (CCPA 1980). Claims 5 – 7 differ from Claim 2 by their limitation of having a value of the bypass resistor equal to 5 ohms. According to Gauthier (col. 4, line 62 – col. 5, line 3), the resistor limits the current charging the capacitor when the transistor is in off state. Therefore, as well known in the art, the duration of the charge process depends on the resistor value, i.e. the resistance of the resistor is a result effective variable, which value

was found in optimization process. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the resistor value to 5 ohms, since according to the Court Decision, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. As to selection of MOS transistor having specific "on" resistance value, the textbook of Horowitz et al. discloses the values (see Table 3.5 on pages 164, 165), which satisfy the Claim 7 limitations. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Gauthier solution by selecting the MOS transistor with specific "on" state resistance value according to Horowitz et al. textbook, because as well known in the art, selection of particular transistor in the design depends on a trade off between such factors as the transistor quality (the "on" resistance value) and its price; resolving such trade off is a routine task for designer and is not considered as an innovation or an inventive step.

Claims 8 – 9, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Preis et al. in view of Court Decision *In re Boesch*, 617 F.2d 272, 205 USPQ (CCPA 1980). As was stated above, Preis et al. disclose all the elements of Claims 1 and 2. Regarding Claims 9 and 17, Preis et al. disclose a capacitor and a resistor (elements 8 and 9 in Fig. 3), the capacitor having a first end coupled to the external power supply (through element 9 in Fig. 2) and a second end coupled to the field effect transistor (element 11 in Fig. 2). However, it does not disclose a specific length of the time constant of the time-delay circuit. As well known in the art, in the

inrush preventing circuits the time delay is to be adjusted to an expected duration of an inrush current. As well known from College courses of Electrical Circuits, the time delay is approximately equal to the time constant multiplied by factor of 2.3. Therefore, the value of the time constant is the result effective variable in determining the length of the delay (inrush current protection duration) and a particular value of the time constant can be found by optimization. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the time constant to any particular value, including 2 – 3 milliseconds, since according to the Court Decision, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Claims 10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of Kendall et al. (US 4,775,928). As was stated above, Gauthier discloses all the elements of Claims 1 and 13. However, regarding Claims 10 and 18, it does not disclose the hand held computing device. Kendall et al. disclose the radio device provided in a compact flash form factor, i.e. in the same hand-held terminal device (shown in Fig. 1); the low-power source is inherently provided in a handheld computing device and the radio device (element 148 in Fig. 2) is coupled to the handheld computing device (element 128 in Fig. 2).

Claims 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of view of Pace et al. (US 6,140,490). As was stated above,

Gauthier discloses all the elements of Claim 1. However, regarding Claims 11 and 19, it does not disclose the device as being the radio device. Pace et al. disclose the radio device (shown in Fig. 1) operating from the battery and having the inrush current protection (col. 5, lines 1 – 12). Both references have the same problem solving area, namely protecting the electronic equipment against inrush currents. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Gauthier solution by adding the radio device according to Pace et al., because it would bring an expansion of business activity to the inrush current protection equipment manufacturer.

Claims 12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of view of modern design practice. Claim 12 differs from Claim 1 by its limitation of the inrush current protection circuit being integrated into the power source. In modern design practice there is a strong tendency for integration of different previously separated elements into a single package. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Gauthier solution by integrating the inrush current protection circuit into the power supply source because as well known in the art, the integration results in reduction of size and increase in reliability of the equipment.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of Pace et al. Regarding Claim 21, Gauthier discloses following elements of the

claim including a switch circuit (element T1 in Fig. 2) in series between a power source and a load, the switch inherently has an off state with a high impedance and an on state with a low impedance; a time-delay circuit (elements C1, R1 in Fig. 2) coupled to the switch circuit and inherently having a time constant; wherein before the time constant has elapsed, the switch circuit is in the time constant has elapsed, the switch circuit is in the low impedance on state so that the load device is powered by the external power source. However, regarding Claim 21, it does not disclose the device as being the radio device. Pace et al. disclose the radio device (shown in Fig. 1) operating from the battery and having the inrush current protection (col. 5, lines 1 – 12). Both references have the same problem solving area, namely protecting the electronic equipment against inrush currents. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Gauthier solution by adding the radio device according to Pace et al., because it would bring an expansion of business activity to the inrush current protection equipment manufacturer.

Claims 22, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of Pace et al., Horowitz et al. textbook, *The Art of Electronics* and Court Decision *In re Boesch*, 617 F.2d 272, 205 USPQ (CCPA 1980). As was stated above, Gauthier and Pace et al. disclose all the elements of Claim 21. However, regarding Claims 22 and 23, they do not disclose particular resistances of the on state MOS transistor and of the current limiting resistor. According to Gauthier (col. 4, line 62 – col. 5, line 3), the resistor limits the current charging the capacitor when the transistor

is in off state. Therefore, as well known in the art, the duration of the charge process depends on the resistor value, i.e. the resistance of the resistor is a result effective variable, which value was found in optimization process. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the resistor value to 5 ohms, since according to the Court Decision, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. As to selection of MOS transistor having specific "on" resistance value, the textbook of Horowitz et al. discloses the values (see Table 3.5 on pages 164, 165), which satisfy the Claim 7 limitations. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Gauthier solution by selecting the MOS transistor with specific "on" state resistance value according to Horowitz et al. textbook, because as well known in the art, selection of particular transistor in the design depends on a trade off between such factors as the transistor quality (the "on" resistance value) and its price; resolving such trade off is a routine task for designer and is not considered as an innovation or an inventive step.

Regarding Claim 25, Gauthier discloses the steps of initially charging the device (particularly elements C11 and C12 in Fig. 3) with a power source in a low power state (when the loading device has not full power); sensing a voltage across a component associated with the device (elements C11 and C12 in Fig. 3); and switching from the low power state to a high power state when the voltage exceeds a threshold level.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gauthier in view of Pace et al., Horowitz et al. textbook, *The Art of Electronics* and Court Decision *In re Boesch*, 617 F.2d 272, 205 USPQ (CCPA 1980). As was stated above, Gauthier discloses all the elements of Claim 22. Regarding Claim 24, Gauthier discloses a capacitor and a resistor (elements C11, C12 and R11, R12 in Fig. 3), the capacitor having a first end coupled to the external power supply and a second end coupled to the gates of the field effect transistors (elements T11 and T12 in Fig. 3). However, it does not disclose a specific length of the time constant of the time-delay circuit equal to 2 – 3 milliseconds. As well known in the art, in the inrush preventing circuits the time delay is to be adjusted to an expected duration of an inrush current. As well known from College courses of Electrical Circuits, the time delay is approximately equal to the time constant multiplied by factor of 2.3. Therefore, the value of the time constant is the result effective variable in determining the length of the delay (inrush current protection duration) and a particular value of the time constant can be found by optimization. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the time constant to any particular value, including 2 – 3 milliseconds, since according to the Court Decision, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571)

272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Z.K.  
08/26/2004

  
8-26-04

STEPHEN W. JACKSON  
PRIMARY EXAMINER